

Serial No.: 10/799,630
Docket No.: 101-1016
Amd. dated October 4, 2005
Reply to the Office Action of July 26, 2005

Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A high-efficiency power supply apparatus used with a driving system driving a display panel, comprising:

a direct current power supplying circuit to improve a power factor by rectifying an alternating current power with reference to a first ground, and generating a first direct current power not isolated from the first ground of the alternating current power, and a second direct current power isolated from the first ground of the alternating current power and with reference to a second ground that is electrically blocked from the first ground;

a display panel driving circuit to generate various driving signals to drive the display panel with the first non-isolated direct current power; and

a video signal processing circuit to perform a predetermined video signal processing to generate data to drive the display panel with the second isolated direct current power.

2. (Currently Amended) The apparatus of claim 1, wherein the direct current power supplying circuit comprises:

a rectifier circuit to rectify the AC power and to output the AC source as a direct current voltage;

a power factor correction circuit to receive the output of the rectifier circuit, to improve the power factor, and to generate the first non-isolated direct current power which is not isolated from the first ground of the alternating current power; and

a direct current-direct current conversion circuit to receive the first non-isolated DC power and to convert the received first non-isolated DC power into the second isolated direct

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current power having a predetermined level isolated from the first ground of the alternating current power and with reference to the second ground.

3. (Original) The apparatus of claim 2, wherein the power factor correction circuit includes a converter to control a level of the output voltage.

4. (Original) The apparatus of claim 3, wherein the converter includes a single ended primary inductance converter (SEPIC).

5. (Original) The apparatus of claim 2, wherein the direct current supplying circuit further comprises a ripple filter to filter a ripple by inputting the output of the power factor correction circuit.

6. (Original) The apparatus of claim 5, wherein the ripple filter includes a serial type switching ripple filter.

7. (Original) The apparatus of claim 1, wherein the display panel includes a plasma display panel.

8. (Original) The apparatus of claim 1, wherein the display panel driving circuit includes a sustain driving circuit of the plasma display panel.

9. (Original) The apparatus of claim 1, wherein the data generated by the video signal processing circuit is transferred to the display panel driving circuit through a photocoupler.

10. (Currently Amended) The apparatus of claim 1, wherein an output end ground ~~(first ground)~~ of ~~a the circuit generating the first non-isolated direct current power~~ with reference to the first ground in the direct current power supplying circuit and a ground ~~(first ground)~~ of the

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display panel driving circuit are connected to each other, an output end ground-(second-ground) of ~~the~~ a circuit generating the second isolated direct current power with reference to the second ground in the direct current power supplying circuit and a ground-(second-ground) of the video signal processing circuit are connected to each other, ~~and the first grounds and the second grounds are electrically blocked from each other.~~

11. (Currently Amended) A method of designing a high-efficiency power supply apparatus used with a display panel driving system of a display panel, the method comprising:
providing a first non-isolated direct current power with reference to a first ground, which is not isolated from a ground of an input alternating current power directly to a display panel driving circuit; and
providing ~~an~~ a second isolated direct current power with reference to a second ground, which is isolated from the first ground of the input alternating current power, to a video signal processing circuit which performs a predetermined video signal process to generate data used to drive a display panel; and
wherein the first and second grounds are electrically blocked from each other to isolate
~~isolating the display panel driving circuit and the video signal processing circuit.~~

12. (Currently Amended) The method of claim 11, wherein a ground-(first-ground) of ~~the~~ a circuit-generating that generates the first non-isolated direct current power in ~~the~~ a direct current power supplying circuit and a ground-(first-ground) of the display panel driving circuit are connected to each other, a ground-(second-ground) of ~~the~~ a circuit-generating that generates the second isolated direct current power in the direct current power supplying circuit and a ground-(second-ground) of the video signal processing circuit are connected to each other, ~~and the first grounds and the second grounds are electrically blocked from each other.~~

13. (Currently Amended) The method of claim 11, wherein the first non-isolated direct current power is an output power of a power factor correction circuit.

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14. (Currently Amended) The method of claim 11, wherein the first non-isolated direct current power is an output power passed through the power factor correction circuit and a ripple filter.

15. (Original) The method of claim 11, wherein the data generated by the video signal processing circuit is transferred to the display panel driving circuit through a photocoupler.

16. (Original) The method of claim 11, wherein the display panel includes a plasma display panel.

17. (Original) The method of claim 11, wherein the display panel driving circuit includes a sustain driving circuit of the plasma display panel.

18. (Currently Amended) A display panel driving system having a video signal processing circuit and a display panel driving circuit to drive a display panel, the system comprising:

a power supply unit generating to generate a first non-isolated power with reference to a first ground potential and to provide the first power to the display panel driving circuit, and to generate a secondan-isolated power with reference to a second ground potential and to provide the second power to the video signal processing circuit, wherein the non-isolated power is isolated from the isolated power first ground potential is electrically isolated from the second ground potential so that the display panel driving circuit is isolated from the video signal processing circuit.

19. (Currently Amended) The system of claim 18, wherein the display panel driving circuit comprises a sustain driving circuit connected to a the first ground potential, and the video

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signal processing circuit is connected to-a the second ground potential-which-is-isolated-from
the first ground potential.

20 (Currently Amended) The system of claim 18, further comprising:
a DC-DC conversion circuit coupled between the power supply unit and the video signal processing circuit, wherein the power supply unit comprises a circuit receiving an AC power and outputting a DC power, and the DC power is transmitted to the video signal processing circuit through the DC-DC conversion circuit and directly to the display panel driving circuit without passing through the DC-DC conversion circuit.

21. (Currently Amended) The system of claim 20, wherein the display panel driving circuit and the DC-DC conversion circuit are connected to-a the first ground potential, and the video signal processing circuit is connected to-a the second ground potential-which-is-isolated from the first ground potential.

22. (Currently Amended) The system of claim 21, further comprising:
a high voltage outputting circuit supplying a high voltage to the display panel and connected to the first ground potential; and
a second DC-DC conversion circuit ~~converter~~ connected between the high voltage outputting circuit having primary first and secondary second coils connected to the first ground potential.

23. (Original) The system of claim 21, further comprising:
a photocoupler coupled between the video signal processing circuit and the display panel driving circuit and connected to the second ground potential.

24. (Currently Amended) The system of claim 23, further comprising:

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a logic circuit coupled to the photocoupler to transmit data generated from the video processing circuit to the display panel driving circuit; and

a converter coupled between the logic and the DC-DC conversion circuit~~converter~~, and coupled to the second ground potential.

25. (Currently Amended) The system of claim 18, wherein the display panel is a plasma display panel (PDP) receiving data from the video signal processing circuit and a driving signal from the display panel driving circuit according to the data, and the system does not have a DC-DC conversion circuit connected between the power supply ~~apparatus unit~~ and the display panel driving circuit so that the ~~non-isolated~~ first power is supplied directly to the display panel driving circuit while maintaining a common ground potential with an input AC power supply.

26. (Currently Amended) A method of driving a display panel in a display panel driving system having a video signal processing circuit and a display panel driving circuit, the method comprising:

generating a ~~non-isolated~~ first direct current power with reference to a first ground potential not isolated from an input alternating current power and ~~an isolated~~ a second direct current power with reference to a second ground potential isolated from the an input alternating current power; and

supplying the ~~non-isolated~~ first direct current power to the display panel driving circuit and the ~~isolated~~ second direct current power to the video signal processing circuit.

27. (Original) The method of claim 26, further comprising:
isolating the display panel driving circuit from the video signal processing circuit.